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U. S. Department of Agriculture

UNITED STATES DEPARTMENT OF AGRICULTURE

SERVICE AND REGULATORY ANNOUNCEMENT

Bureau of Plant Industry

November 2, 1928

COLORING IMPORTED ALFALFA AND RED CLOVER SEED AS REQUIRED
UNDER THE FEDERAL SEED ACT*

The Federal Seed Act requires the coloring of all seed of alfalfa and red clover imported into the United States, as follows:

Alfalfa and red clover seed grown in Canada -
One (1%) per cent violet

Red clover seed grown in Italy -
Ten (10%) per cent red

Alfalfa seed grown in Africa -
Ten (10%) per cent red

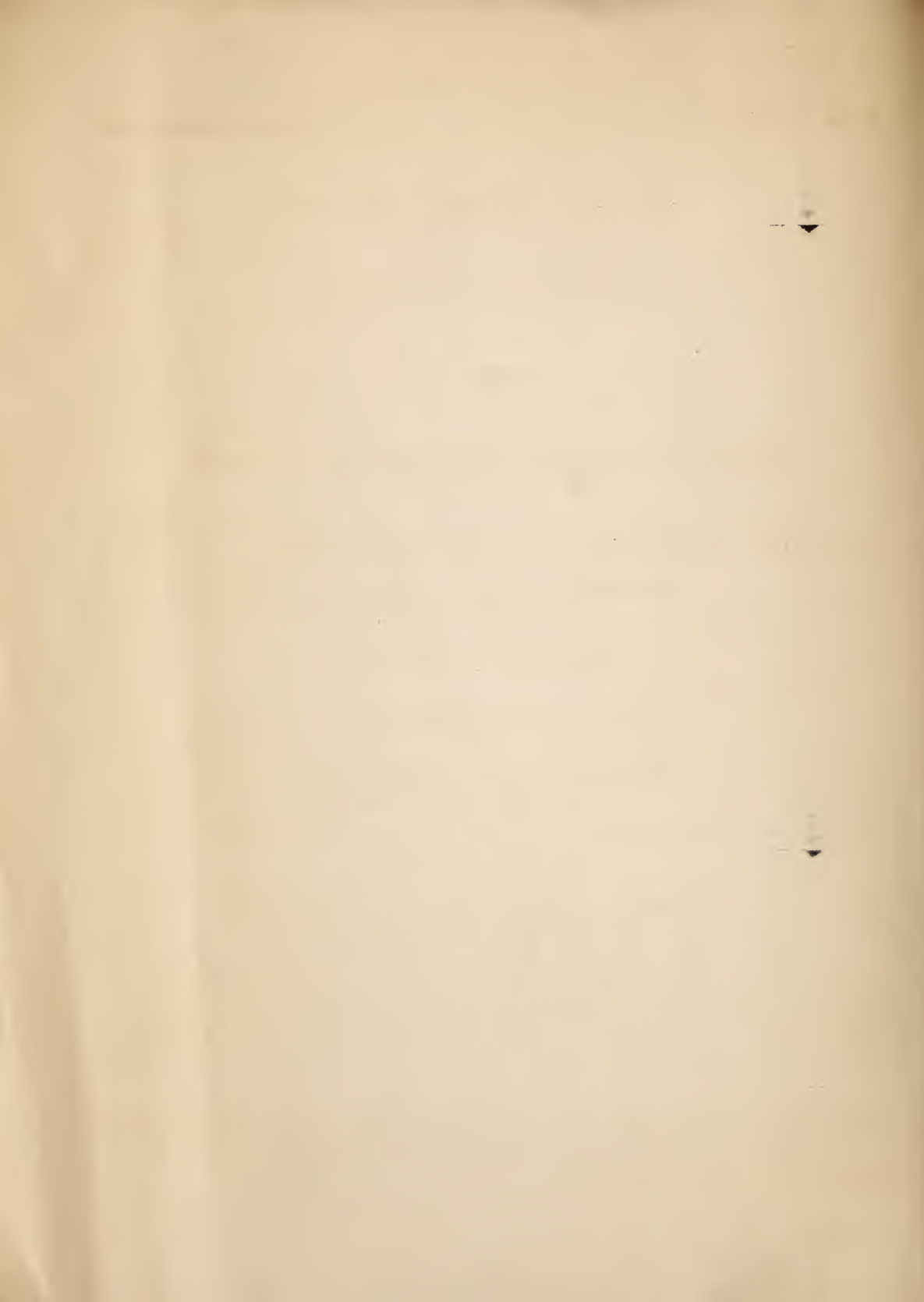
Alfalfa seed grown in South America -
Ten (10%) per cent orange-red

Alfalfa and red clover seed of unknown origin -
Ten (10%) per cent red

Alfalfa and red clover seed of known origin,
not specifically provided for above -
One (1%) per cent green

It has been found most satisfactory to color completely one or ten per cent of the seed, as required, and mix this thoroughly with the uncolored seed. In coloring seed completely, dyes in water solution have given better results than dyes in alcoholic solution, and cost less to use.

*This supplements Regulation 9 of the "Joint Regulations of the Secretary of the Treasury and the Secretary of Agriculture under the Federal Seed Act," issued July 1926, S.R.A. - B.P.I. 9, (Treasury Decision No. 41724), as amended by Treasury Decision No. _____.



Where facilities for bulking seed after coloring are not available, the seed may be colored one per cent violet or green in the sacks, using a dye in alcoholic solution.

Dye in alcoholic solution is not recommended except when staining seed in sacks.

COMPLETE STAINING WITH WATER-SOLUBLE DYE

It is practicable to color seed completely both with a concrete mixer and with a waterproof sheet.

Concrete Mixer Method:

The seed is placed in an ordinary concrete mixer, the solution of water-soluble dye is added and the mixer is turned until the color is evenly distributed over the seed. The seed is then put in a pile and left without stirring until it is dry. Good results cannot be expected unless both the quantity of dye in the solution and the quantity of solution are used in approximately the proportions recommended.

Waterproof Sheet Method:

Practically the same results as with the concrete mixer method may be obtained by placing the seed on a waterproof sheet on the floor (a sheet 10 X 10 feet for 220 pounds of seed), and putting the solution of the water-soluble dye on the seed with a sprinkling can, and rolling the seed by lifting first one end and then the other end of the sheet until the color is evenly distributed. The seed should then be placed in a pile until dry.

An ordinary canvas, even though it will hold water, should not be used. It must be so treated that it will not absorb water.

Staining was not satisfactorily done by sprinkling the dye over the seed in a pile on the floor and shoveling, as much of the dye solution will be absorbed in the floor and be lost.

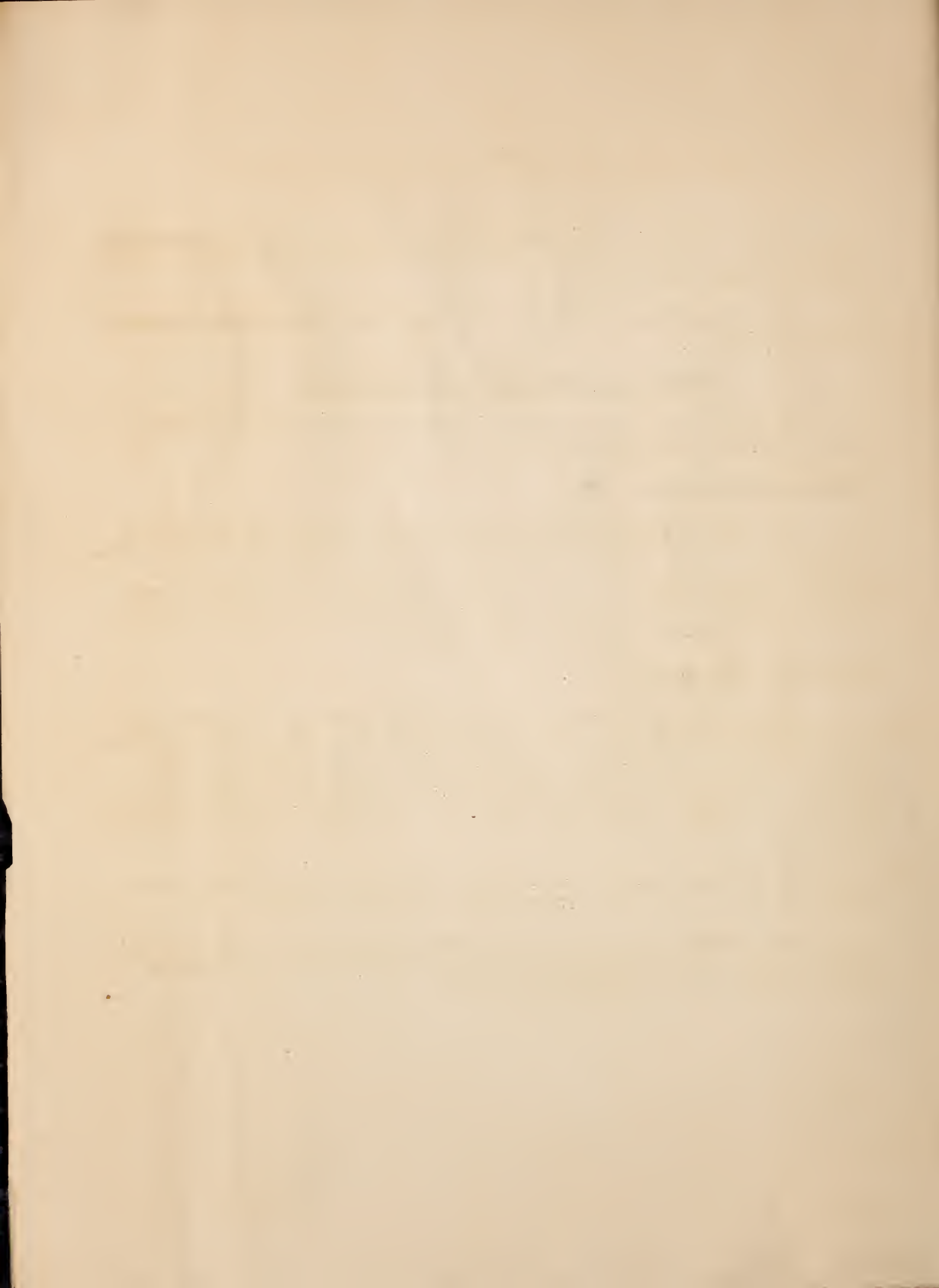
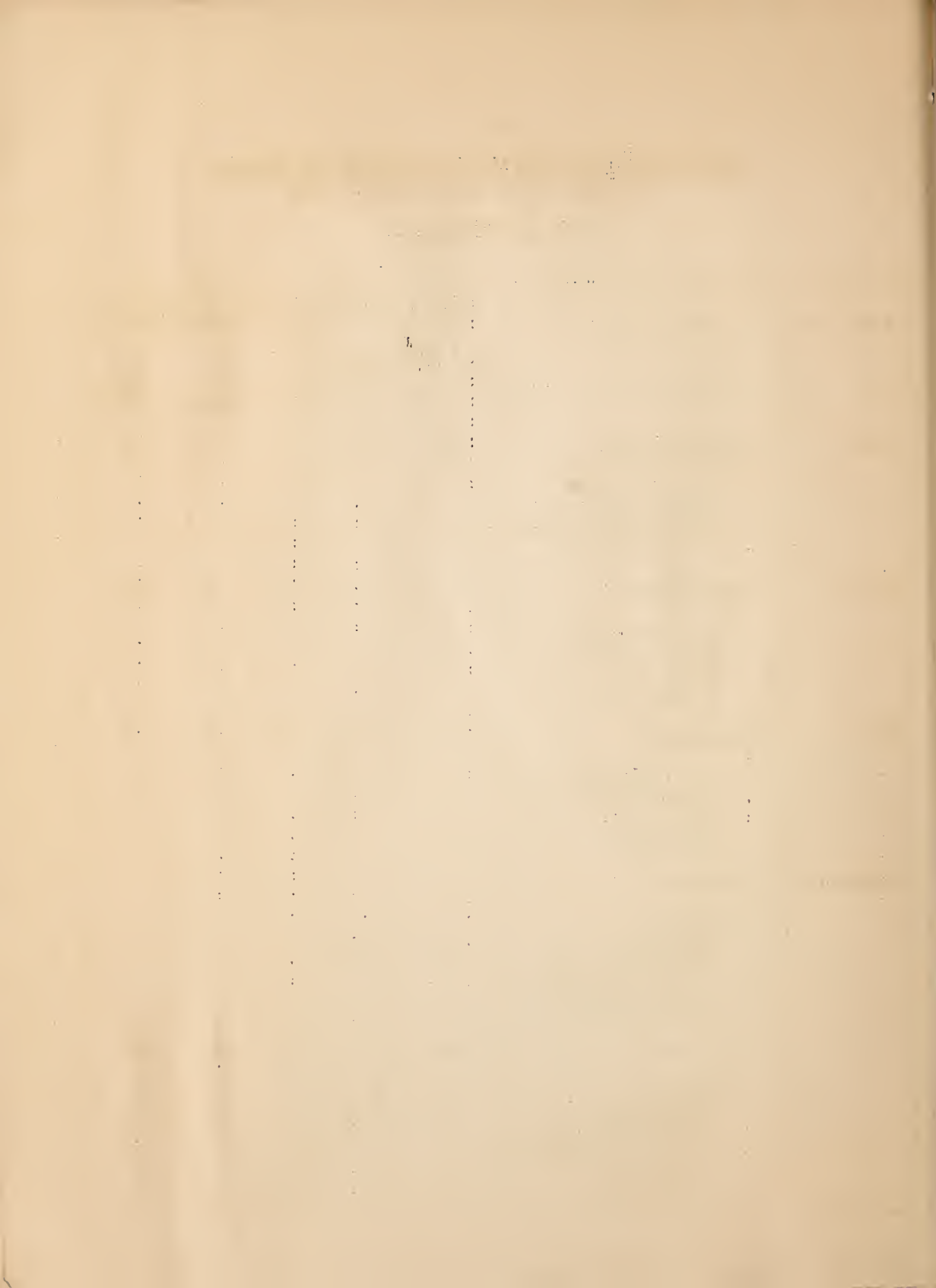


TABLE SHOWING KINDS OF DYE IN SOLUTIONS AND QUANTITY
OF SOLUTION PER UNIT WEIGHT OF SEED

Water-soluble Dye

Seed Color	Kind of Dye	Dye per Gallon of Water		Quantity of Solution for various weights of seed.		
		Ozs.	Grms.	100 lbs.	150 lbs.	200 lbs.
				Pints	Pints	Pints
Green	<u>Malachite Green</u>	2 $\frac{3}{4}$	82	2	3	4 $\frac{1}{2}$
	Color Index #657 (Dupont Victoria green small crystals or equivalent)					
Violet	<u>Methyl Violet</u>	2	60	3	4 $\frac{1}{2}$	6 $\frac{1}{2}$
	Color Index #680 (Dupont Methyl Violet NE., or equivalent)					
Red	<u>Rhodamine B</u>	2	60	2 $\frac{1}{4}$	3 $\frac{1}{2}$	5
	Color Index #749 (Dupont Rhodamine B Extra, or equivalent)					
Orange-Red	Mixture of:-					
	3 Parts:-					
	<u>Orange G</u>	1-1/8	34			
	Color Index #27 (Dupont Orange G, or equivalent)					
	and	and	-	3	4 $\frac{1}{2}$	6 $\frac{1}{2}$
	2 Parts:-					
	<u>Rhodamine B</u>	3/4	22			
	Color Index #749 (Dupont Rhodamine B: Extra, or equivalent)					



ONE PER CENT STAINING WITH ALCOHOL-SOLUBLE DYE

Staining in Bags

Seed may be stained one per cent in cotton or burlap bags, using an alcohol-soluble dye. The sacks should be opened and stood on end, care being taken that they are in a vertical position. The stain should then be poured in the top of the sacks, quickly pouring an equal quantity of stain in each of four places in the top of each sack.

It is impossible to stain seed ten per cent red or orange-red in the sacks.

The specified alcohol-soluble dyes in alcoholic solution should be used to stain seed in sacks.

Dye in water solution ~~cannot be used~~ to color seed in sacks.



TABLE SHOWING KINDS OF DYE IN SOLUTIONS AND QUANTITY
OF SOLUTION PER UNIT WEIGHT OF SEED

Alcohol-soluble Dye

Seed Color:	Kind of Dye	Dye per Gallon of Alcohol		Quantity of Solu- tion per Sack of Seed.	
		Ounces	Grams	150 lbs.	220 lbs.
				cups	cups
Green	<u>Malachite Green</u> <u>base stearate</u> (Dupont green seed stain powder, or equivalent).	4	120	1/2	3/4
Violet	<u>Crystal Violet</u> <u>base stearate</u> (Dupont violet seed stain powder, or equivalent).	4	120	1/2	3/4

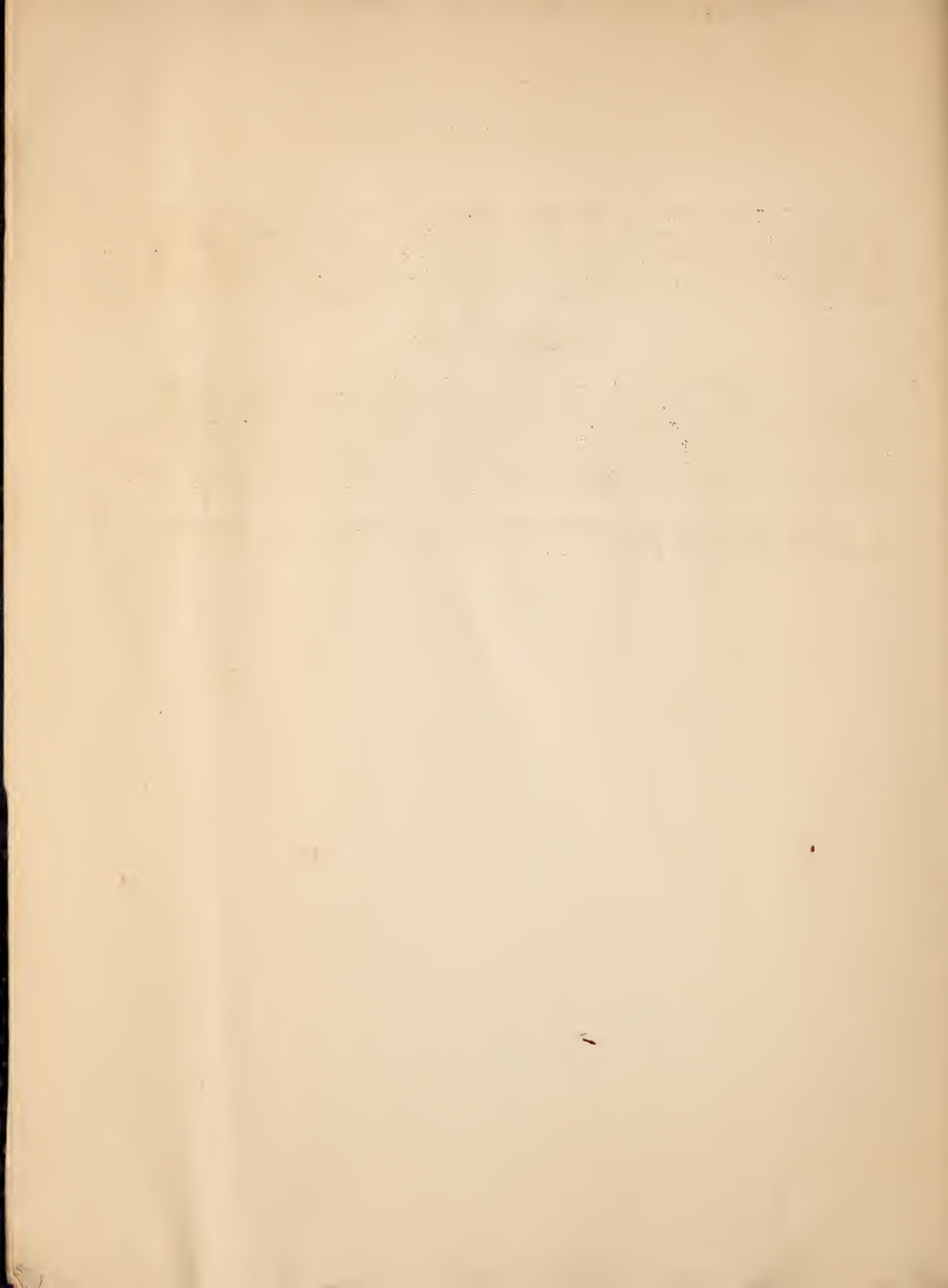
The alcohol used must be 95 per cent strength, and may be either denatured or wood alcohol.

- In staining seed in the sack, use three-fourths of a cup of the alcoholic dye solution for each 220-pound sack of seed, quickly pouring an equal quantity into each of four places in the top of the sack. For 150-pound sacks, use one-half cup, pouring it equally into three places. The sacks should not be moved for 24 hours after staining.

DISSOLVING THE DYE

In all cases the dye must be completely dissolved before the dye solution is used. This can best be done by making a thin paste, using a small paddle or a flexible knife blade (kitchen knife). The remainder of the liquid is then stirred in and the solution poured from one container to another until completely in solution. If the dye separates out on standing, it can be brought back into solution by warming gently.

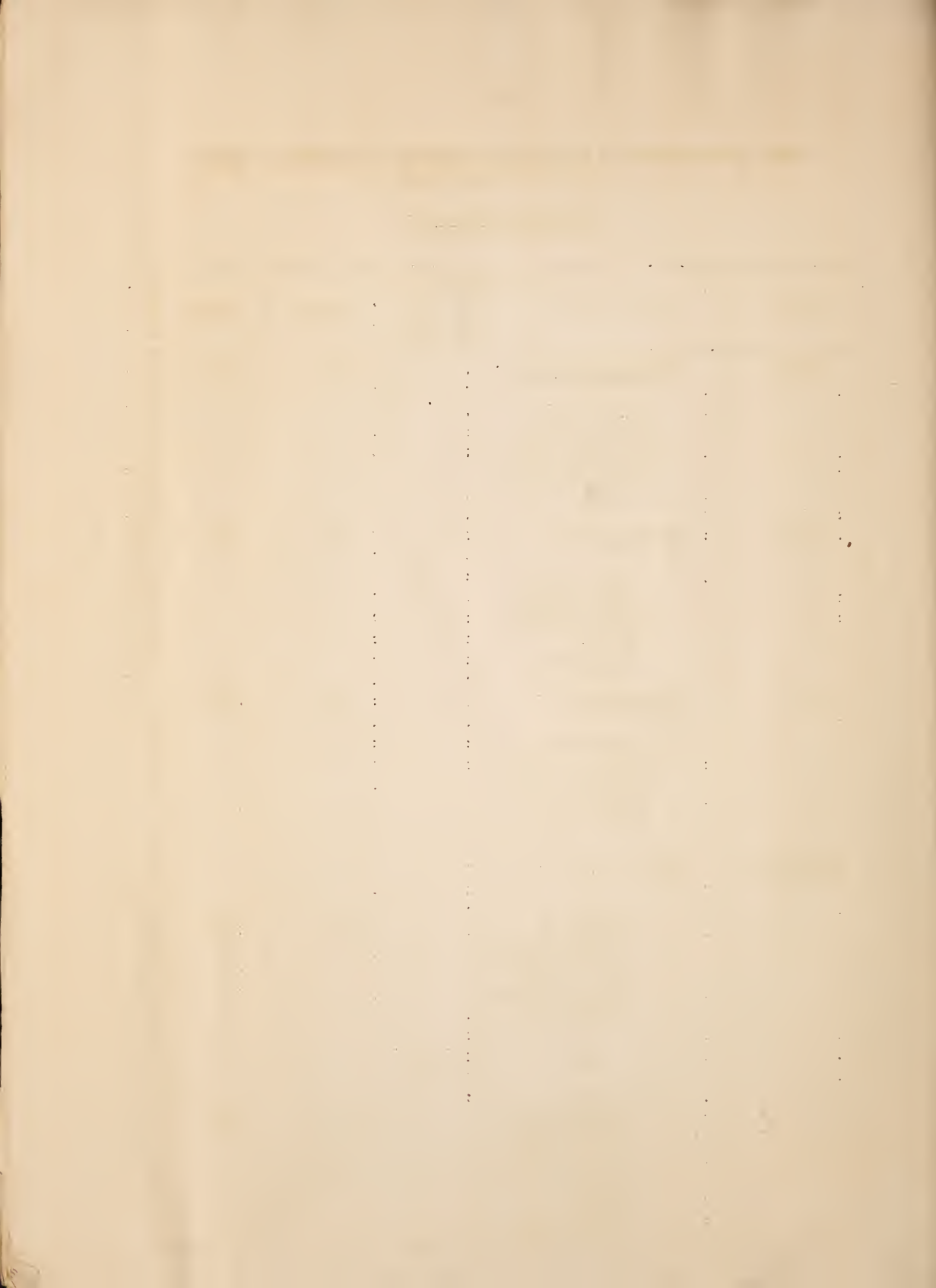
All solutions should be made immediately before using and never allowed to stand over night.



KIND AND QUANTITY OF DYE POWDER REQUIRED TO COLOR 100 SACKS
OF 220 POUNDS EACH

Water-soluble Dye

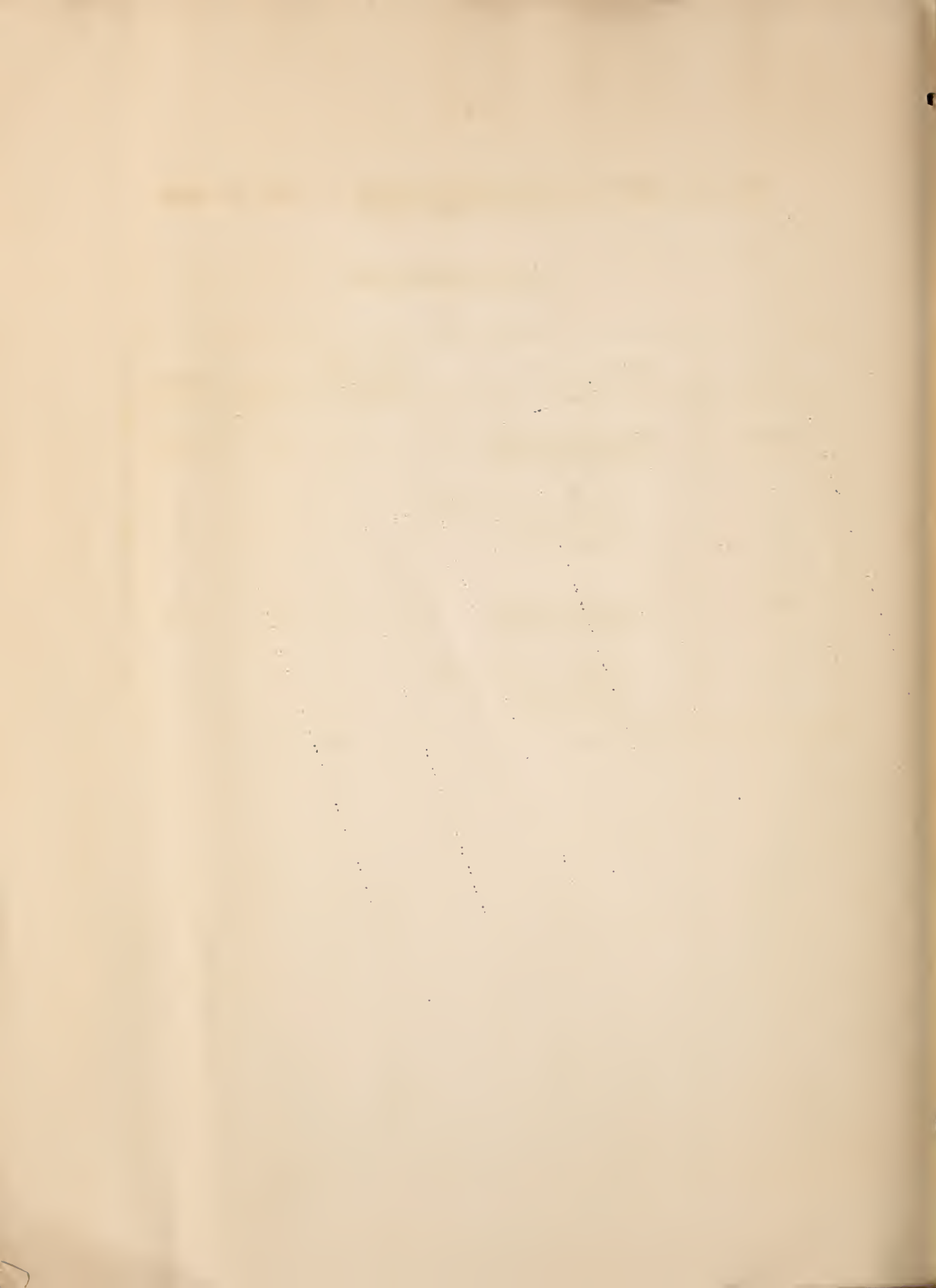
Color	Kind of Dye	Per Cent: of seed: colored:	Ounces	Grams
Green	<u>Malachite Green</u>	1	$1\frac{1}{2}$	45
	(Color Index #657 (Dupont Victoria green small crystals, or equivalent)			
Violet	<u>Methyl Violet</u>	1	$1\frac{3}{4}$	52
	(Color Index #680 (Dupont Methyl Violet NE., or equivalent)			
Red	<u>Rhodamine F</u>	10	$12\frac{1}{2}$	375
	(Color Index #749 (Dupont Rhodamine B Extra, or equivalent)			
Orange-red:	Mixture of:			
	3 Parts:-)		
	<u>Orange G</u>)	$9\frac{1}{4}$	277
	(Color Index:)		
	#27 (Dupont)		
	Orange G, or:)		
	equivalent))		
	and)		
	---10)		
	2 Parts:-)		
	<u>Rhodamine F</u>)	$6\frac{1}{4}$	187
	(Color Index)		
	#749 (Dupont:)		
	Rhodamine B)		
	Extra, or)		
	equivalent))		



KIND AND QUANTITY OF DYE POWDER REQUIRED TO COLOR 100 SACKS
OF 220 POUNDS EACH

Alcohol-soluble Dye

Color	Kind of Dye	Per Cent: of seed colored	Ounces	Grams
Green	<u>Malachite Green</u> <u>base stearate</u>	1	20	600
	(Dupont green seed stain powder, or equivalent).			
Violet	<u>Crystal Violet</u> <u>base stearate</u>	1	20	600
	(Dupont violet seed: stain powder, or equivalent).			



CERTIFICATES OF ORIGIN

For the information of importers of alfalfa and red clover seed subject to the Federal Seed Act, and the regulations thereunder (Treasury Decision No. 41724), the following practice of the Bureau of Plant Industry, U. S. Department of Agriculture, is outlined:

When the consular invoice is not accompanied by an official certificate of origin issued in and on behalf of the country in which the seed was grown (Regulation 11-a), the color to be applied (Regulation 10-c) will not be designated until the samples drawn and forwarded by the Customs Service (Regulations 3 and 4) have been examined by the Bureau of Plant Industry.

Wm. A. Taylor,
Chief of Bureau.

